

Fig. 3

High Freq.

Channel 403(0)

.

Channel 403(m)

Super Frame 405

Lo Freq.

407(n)

Super Packet 407(1)

SPNR 41A

STRID 415

STRID 413

Data 411

SPNR 409

RF Medium 401

Data 404 on Channel 403(1)

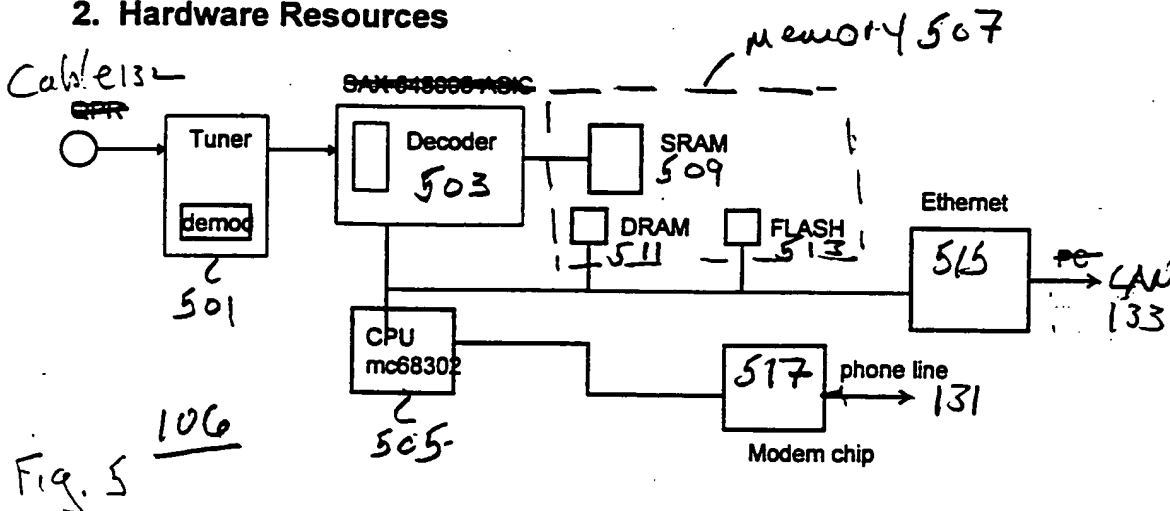
Fig 11

1. Introduction

This document describes the software characteristics of the cable modem used in Scientific Atlanta's *Cable Data Network Architecture*. The cable modem will provide asymmetrical transport using Quadrature Partial Response modulation downstream with upstream data provided by an integral telco-based modem. The connection to the host PC is provided by an Ethernet interface. Since the modem contains a telco modem, an additional mode of operation is as a standard AT command set modem when used with a Scientific Atlanta supplied device driver.

This modem will capitalize on several existing technologies already developed at Scientific Atlanta, most notably Digital Music Express (DMX), and SEGA product lines. In order to hasten the deployment of the modem, an operating system is being purchased from Microtec Research.

2. Hardware Resources



The Scientific Atlanta Cable Modem has several key hardware components that the software will accommodate. The three outside interfaces to the cable modem are the QPR/cable-TV coax, the ethernet port going out to the user network (probably a user PC), and the telephone company modem.

In order to support the three interfaces, there are a number of support components. On the cable /RF side of the box there is a tuner/demodulator which has been previously developed by SA for use in the SEGA project. This tuner/demodulator takes a QPR signal which arrives over a coaxial cable from the cable head end and produces a usable digital stream. This digital stream is passed to the SAX 545005 ASIC which digitally decodes the stream, which includes de-interleaving on multiple levels and decoding the BCH error correction encoding. For more information on how the SAX chip works, see the SA internal documentation titled "Design Requirements Document for the Sega ASIC for 32X-Cost Reduction (SAX-CR)".

In addition to the SAX chip the cable modem motherboard is equipped with a MC68302 general processor, which is connected to most of the other major components via a board level bus. This CPU will be running a real-time operating system called VRTX from Microtec Research. The CPU

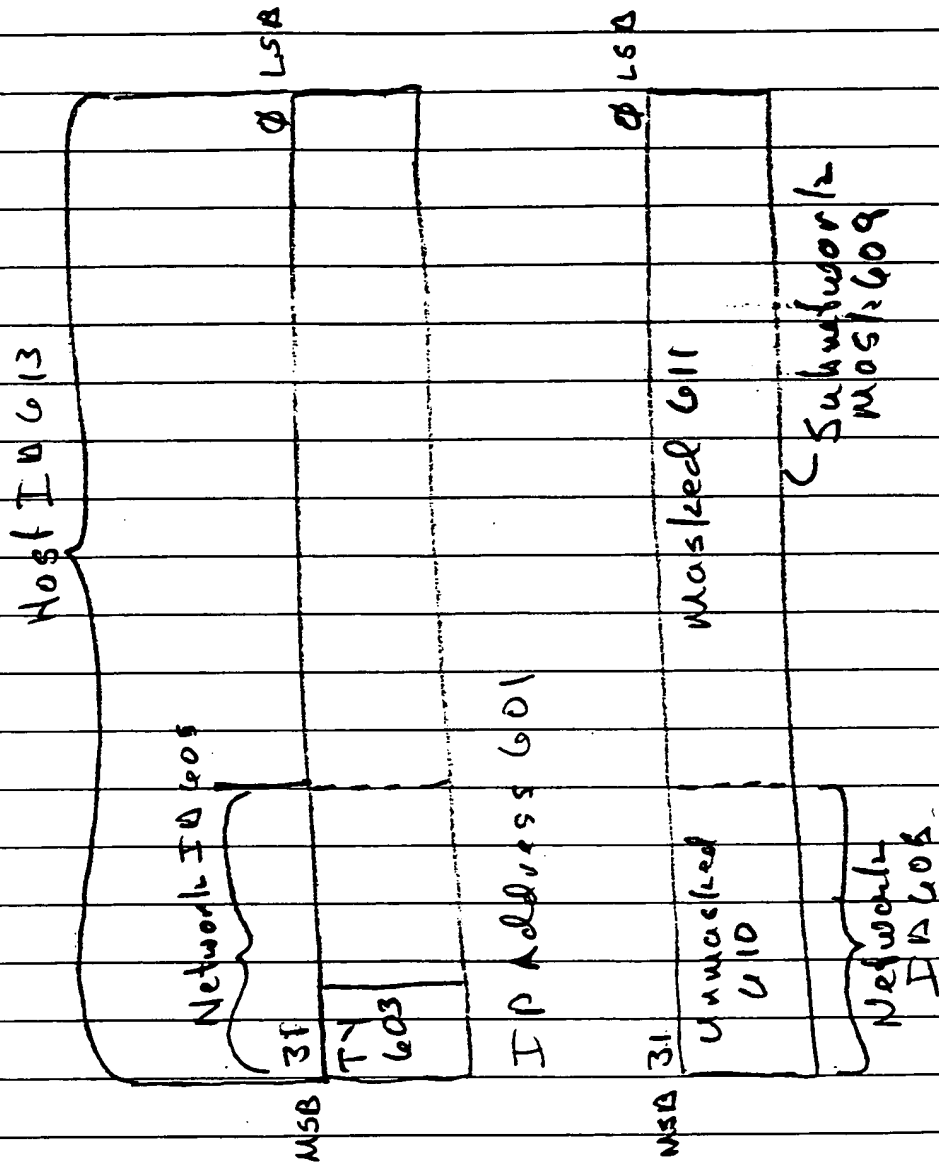
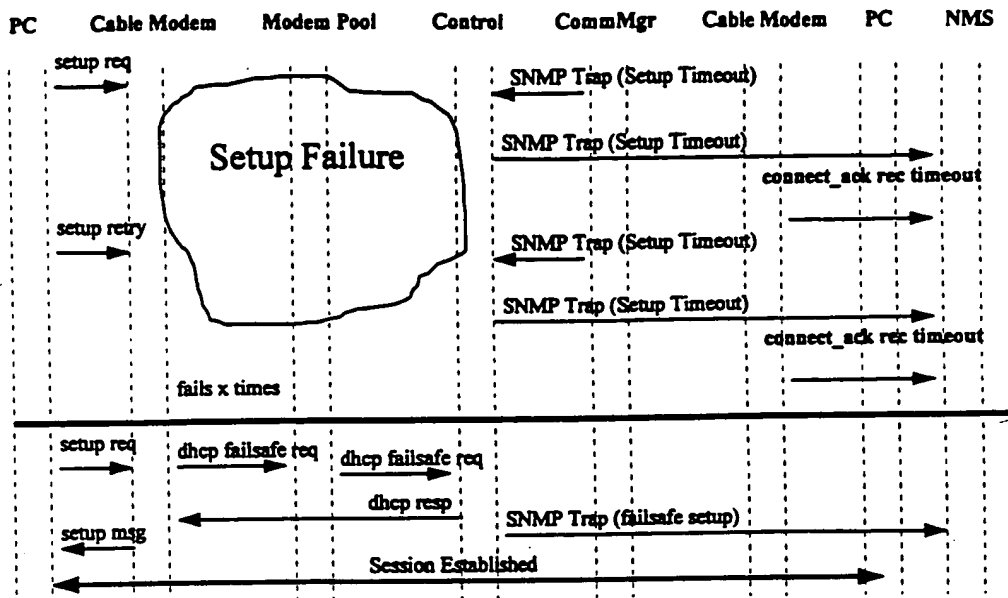


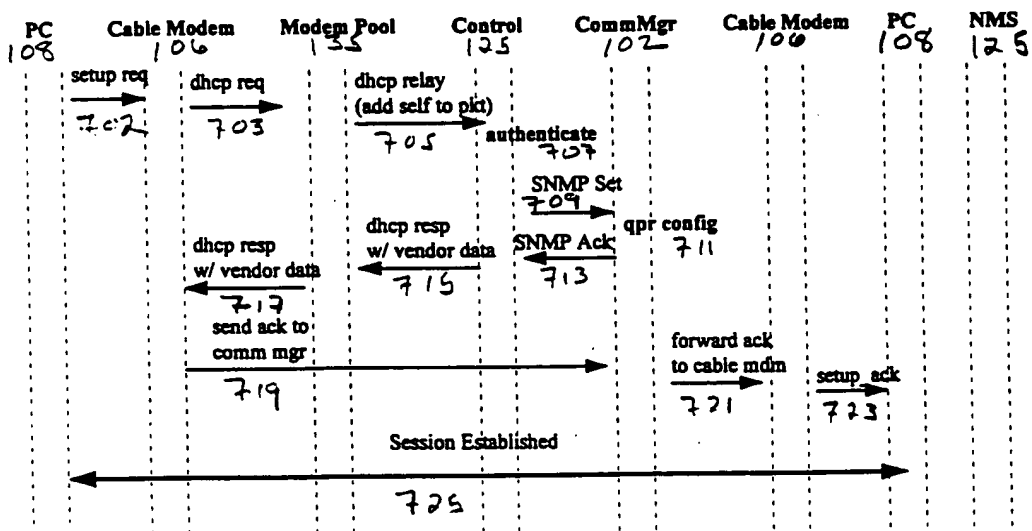
Fig. 6

Figure 11: Scenario D



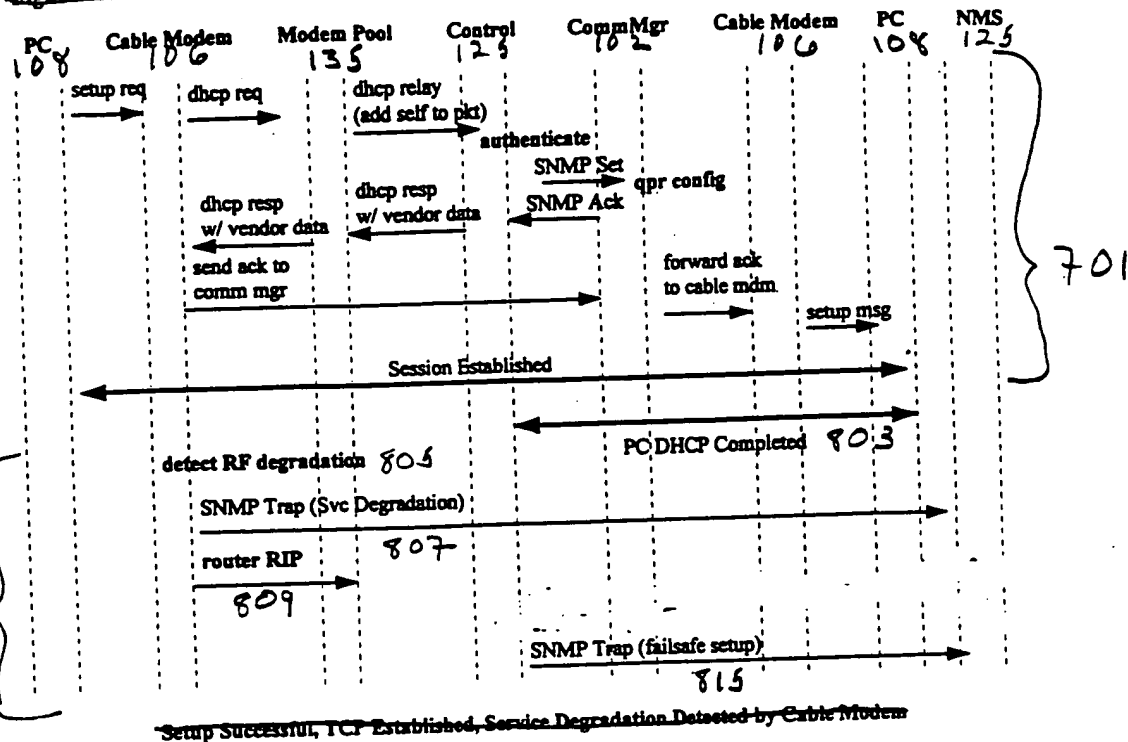
Setup Request From Authorized Subscriber With Setup Retry Failure, Analog Fallback

Figure 12: Scenario E



Setup Request From Authorized Subscriber With Successful Setup

Figure 13 Scenario F



[illegible]

	Dest IHA	Gateway IMA	Routing Info
903(i)	906(ii) NET XXXX 913 915 917	IPA 203(c) 916	
903(j)	HOST IP R	IPA 214(c) 919	
	901 Routing	table for Router	
911 - Dest IMA	Dest IMA	Gateway IMA	Routing Info
922(i)	Host IMA 929	IPA 214(c) 931	
922(j)	IPA 214(c) 930	IPA 214(c) 932	

Dest IPA	Gateway IPA	Routing Info
IPA for Host 108 (a)	IPA for Host 108 (a)	LAN 33
IPA for Host 108 (a-1)	IPA for Host 108 (a-1)	LAN 133
Net IPA 214 (a)	Gateway IPA 214 (a)	LAN 133
Default 115	Net B IPA 214 (a)	Tel#
933 - Routing table for RF Medium 106		
Dest IPA	Gateway IPA	Routing Info
Net 108 (a)	IPA 203 (c)	
IPA 203 (c)	IPA 203 (c)	
default 115	IPA 203 (c)	
949 - Routing Table for Communication Manager 102		

IPA for Host 109 1003

Hash Function 1005

IX Val. 1009

List ptr 1013

Hasharray 1011

LE 1013

IPA	1013
Next ptr	1019
CCB ptr	1021

IPA	1023
Mod #	1029
Pipe #	1031
RFM ID	1033
Next ptr	1035

CCB Block 1023

1013

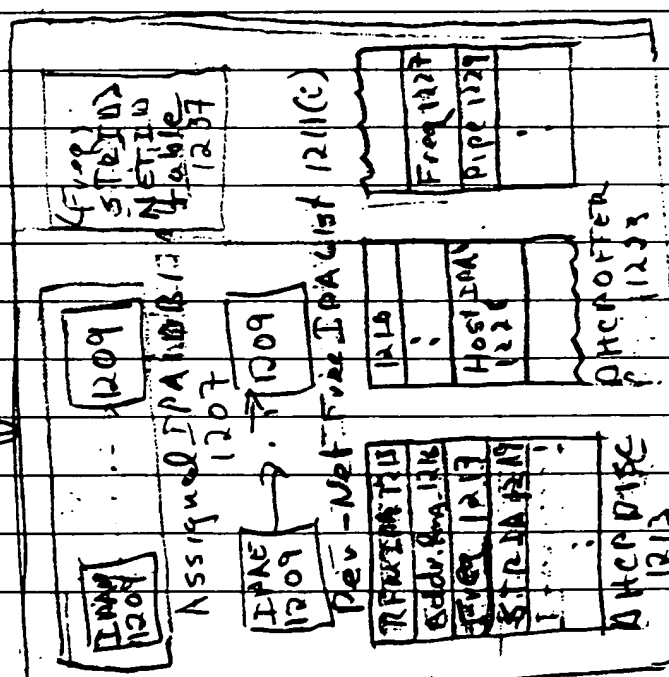
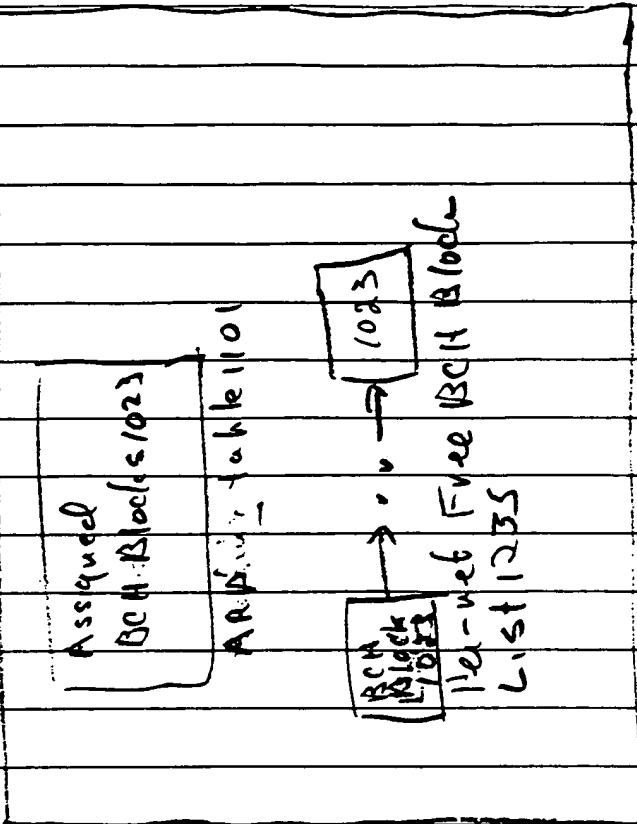
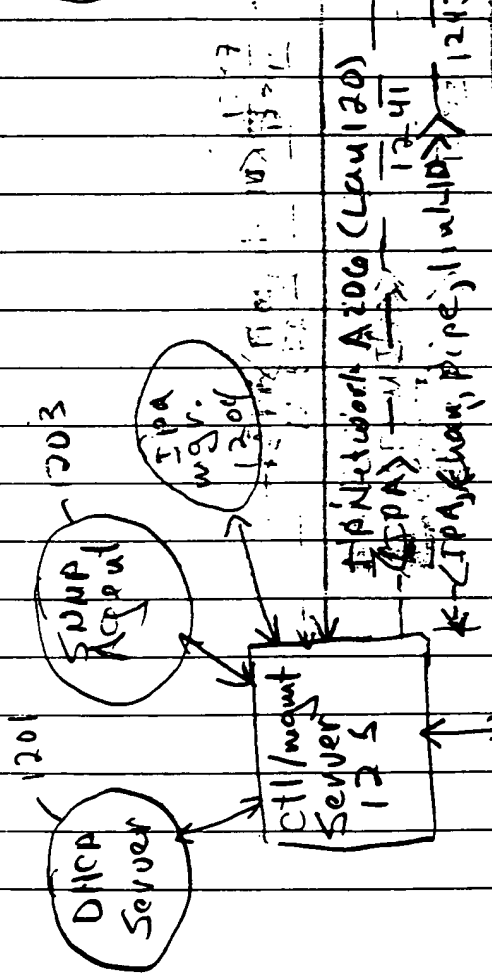
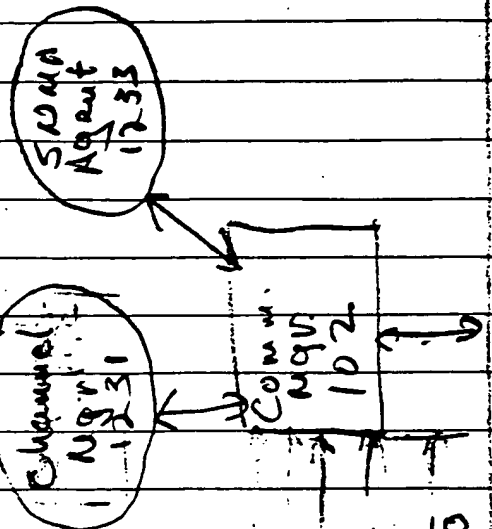
1023

1013

Commgr. AR. Gachke's 1001

IN

TOPTT-2305453



Memory 1235

Memory 1205

Fig 10